

## Missouri Research and Education Network's (MOREnet) Expression of Interest

In response to the FCC: REPORT AND ORDER, ORDER AND FURTHER NOTICE OF PROPOSED RULEMAKING, PROPOSAL FOR ONGOING DATA INITIATIVE

Adopted: January 30, 2014 Released: January 31, 2014

Regarding the Connect America Fund: Southeast Missouri Fiber Projects

### Missouri's Research and Education Network

The Missouri Research and Education network (MOREnet) has been serving Missouri's research and education community for the last 22 years including over 500 school districts, 200 public library sites, higher education institutions, telehealth and other healthcare sites. MOREnet supports an innovative US-Ignite and University of Missouri research partnership for an in-home sensor network to help predict fall risk and other medical issues for seniors.

Missouri was the site of the first "Internet" circuit after President Clinton opened the "inter-networking" of the National Science Foundation network (NSFnet) and its underlying technologies to commercialization. Prior to its commercialization, MOREnet had successfully connected nearly all eligible Missouri entities to the NSFnet. As an operating unit of the University of Missouri system able to serve any of the community anchor institutions (CAIs), MOREnet is focused on research and education in the state of Missouri. MOREnet sees one of its roles as driving private sector investment in next generation networking technology through procurement actions to serve its membership.

MOREnet is one of only eight entities filing as an E-Rate education/library consortium for its members. As a cost-containment measure, fiber was acquired to move the network backbone from a variable, recurring cost model to a largely fixed cost investment several years ago. As the network has grown, this fixed cost asset has enabled MOREnet reduce connectivity rates for all members in each of the last four years.

MOREnet proposes two connectivity projects to community anchor institutions in support of President Obama's ConnectED goals of building high-speed digital connections to America's schools and libraries, ensuring that 99 percent of American students can benefit from these advances in teaching and learning. The President further directed the federal government to leverage existing funding streams to accelerate deployment of technology into classrooms, and into the hands of teachers trained on its advantages.

## Project Proposal

MOREnet is in the process of procuring dark fiber access to nearly two hundred sites in the southeast region of Missouri. Significant areas of the region are high cost and poorly served as shown on the maps below. MOREnet has historically been challenged to procure cost-effective capacity to serve our members in this region. While some areas of the region are sufficiently served from a leased circuit perspective, MOREnet seeks a consistent, robust infrastructure for all members.

The project partner submitted a fully-qualified response to MOREnet's Request for Proposal (RFP). The project partner has developed a regional fiber project in the southeast portion of the state which could be developed to serve a significant portion of the MOREnet member sites in the region. The project partner and MOREnet are in final negotiations to connect member sites to the existing regional fiber project.

MOREnet has recently completed a K-12 Readiness Project for the Department of Elementary and Secondary Education (DESE) to determine which school districts are able to meet the SETDA Minimum Bandwidth Recommendations<sup>1</sup>.

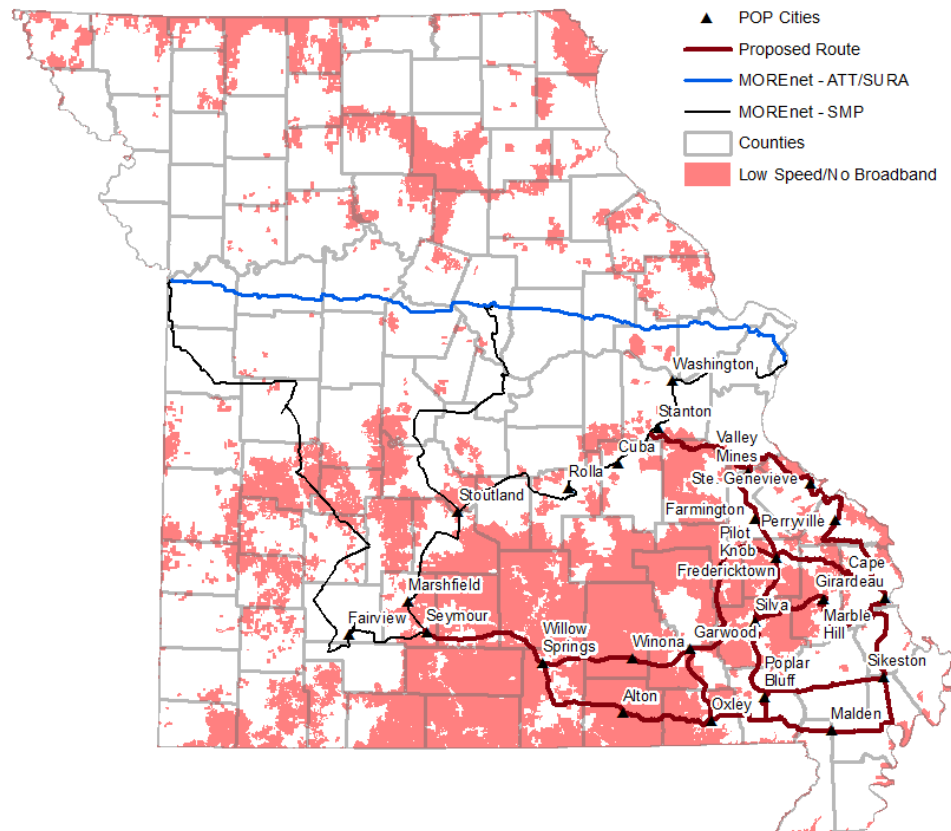
MOREnet proposes to connect school districts, public libraries, higher education, healthcare and other state Community Anchor Institutions (CAIs) to meet The President's ConnectED goals, **SETDA 2017-18**, FCC's OBI Technical Paper No. 5 **HEALTH CARE BROADBAND IN AMERICA**<sup>2</sup> or other applicable standards along the project partner's southeast Missouri fiber route (see Figure 1 below).

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<sup>1</sup> [http://www.setda.org/wp-content/uploads/2013/09/The\\_Broadband\\_Imperative.pdf](http://www.setda.org/wp-content/uploads/2013/09/The_Broadband_Imperative.pdf)

<sup>2</sup> <http://download.broadband.gov/plan/fcc-omnibus-broadband-initiative-%28obi%29-working-reports-series-technical-paper-health-care-broadband-in-america.pdf>

Figure 1 - Southeast Missouri fiber project: Proposed Fiber route overlaid on MoBroadband Now's Broadband mapping data by Census blocks:



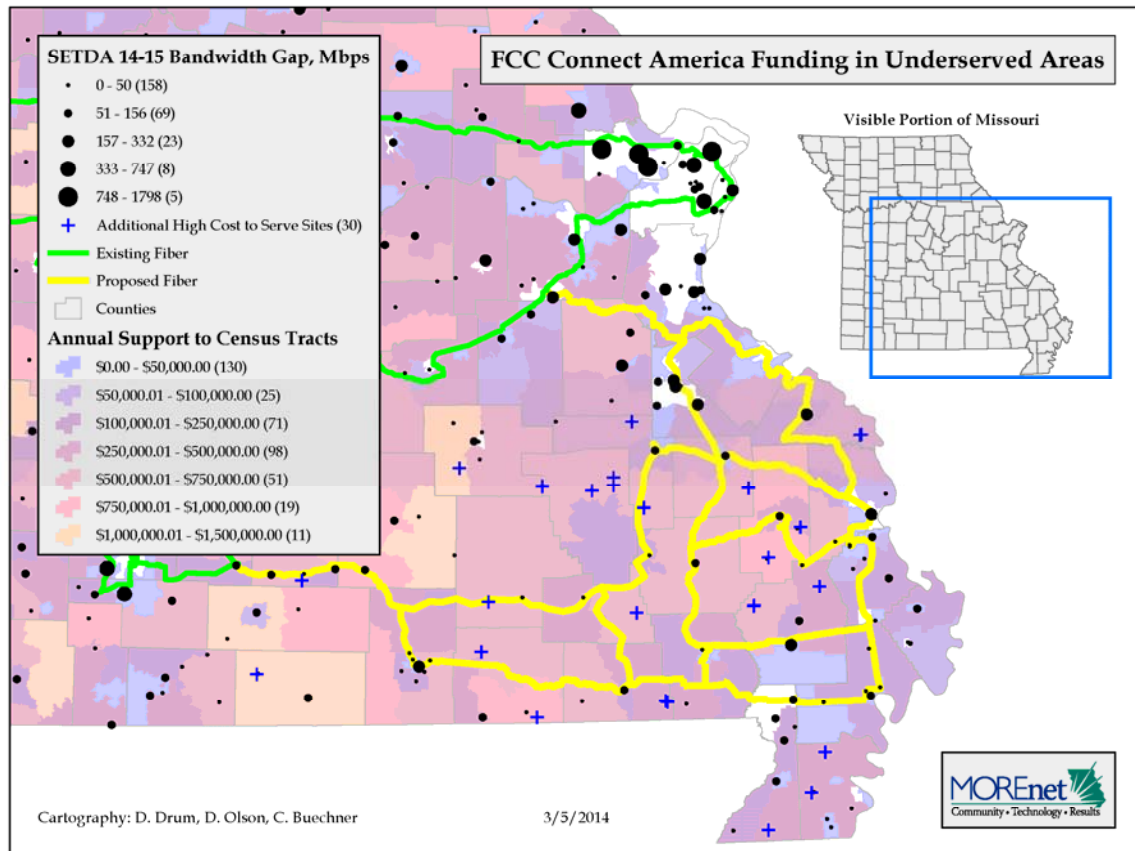
In contrast to MOREnet's traditional use of E-Rate funding for leased circuits, this project will employ E-Rate funding for eligible dark fiber. While the bulk of the costs will be reimbursed by E-Rate for eligible K-12 and library sites, MOREnet proposes to use reasonable cost recovery from the sites and Connect America Funds to offset the other initial fiber connection costs, the required on-going fiber maintenance and operations (M&O) costs and network management costs.

While negotiations are on-going, project costs over the 20 year life are estimated to be \$45-50 million in fiber, equipment and other project costs. Given the mix of E-Rate eligible institutions and their discount rates, E-Rate reimbursement is estimated to cover approximately one-third of the costs with project revenues and Connect America Funds covering the remaining two-thirds over the life of the project.

Of the 217 CAI sites solicited in the RFP; 14 sites are in the "low-bandwidth or no bandwidth" census block designation of Missouri's National Broadband Plan mapping entity - MOBroadband Now. 77 sites are in the FCC's designated >\$250K annual support *census tracts*. The project partner proposed serving about 70% of the requested 217 CAI sites including 5 of the 14 sites in the low-bandwidth designation *census blocks* and 46 of the 77 sites in the FCC's >\$250K annual support *census tracts*.

To reach the remaining 31 high cost CAI sites in the southeast region with next generation networks will require an estimated 490 to 550 miles of new fiber. At a build cost of \$40K per mile, connecting these sites will require an estimated \$20–23 million dollars of new investment. While this new project would focus on the Community Anchor Institutions and the goals of the ConnectedED program; the bulk of the new fiber could be used to provide access to projects serving residential and commercial facilities under carrier-neutral, open-access rules. The 31 high cost CAI sites are indicated in Figure 2.

Figure 2 - Additional High Cost Sites overlaid on the FCC High cost to Serve Census Tracts.



While the projects proposed using the prevailing broadband standards mentioned above, the whole purpose of a fiber project is to future-proof the network to absorb magnitude-level growth rates while protecting the initial investment in fiber. MOREnet's "business model" for the network is to provide robust connectivity that can affordably support growth for innovative, emerging applications while keeping the membership consortium financially stable and viable through cost recovery.

MOREnet believes that rural students, library patrons, patients and citizens should have the same access to opportunities and resources that are readily available in competitive, well-connected metropolitan areas. These projects are focused on providing the same robust connectivity to support a uniform set of services to CAIs in proposed coverage area. For publically-supported CAI's, high-cost access to broadband is just as rigid a barrier as no or low availability of robust connectivity. MOREnet is focused on the high cost and very high cost service areas identified by the FCC's census block data. Having just completed a survey of K-12 school districts' readiness to meet the Common Core School Standards (CCSS) testing requirements and the SETDA recommendations, MOREnet has documented the gap between existing resources available to Missouri K12 students and the recommended minimums.

### Technologies Deployed

MOREnet requires the network to be fully-symmetrical (same capacity uploads and downloads) and non-blocking, full Committed Information Rate (CIR) to ensure members get the full capacity. MOREnet will utilize DWDM technologies on the core network and across its shared network elements to lay the foundation for cost-effective capacity expansion after the initial acquisition of fiber.

### Network Expansion and Project Futures

MOREnet is already in the process of expanding this project through potential fiber swaps and tower access to bring robust connectivity other CAIs in the surrounding areas.

MOREnet encourages the FCC to fund these projects as well as future fiber projects to provide cost-effective access to rural areas and to support next-generation resources and opportunities to all students, library patrons, patients and citizens regardless of their location in the state. MOREnet believes that one-time investment in fiber projects will reduce the on-going costs and maximize the impact of the Connect America Funds for schools, libraries, institutions of higher education and other community anchor institutions while meeting the goals of the President of the United States.